

ALEXANDRE EBERHARDT

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Seeking a 4-month final-year internship in robot learning and physical AI, Jan – Apr 2027, in Québec City, Paris or California.

EDUCATION

Université Laval

Québec City, Canada

M.Sc. in Computer Engineering (professional master's), dual degree with UTC

Aug 2025 – Apr 2027

- GPA: 3.83 / 4.33. Coursework: Reinforcement Learning, Deep Learning, Mobile Robotics (A+), Computer Vision (A), Computational Complexity (A+), Software Quality (A), Cloud-native & DevOps, Technology Entrepreneurship.
- Research (Fall 2026): Kubernetes scheduler comparing heuristic, ML and LLM placement, with Prof. M. A. Saied; paper in progress.

Université de Technologie de Compiègne (UTC)

Compiègne, France

M.Eng. in Computer Science, INES track (Embedded Computing & Autonomous Systems)

Sept 2021 – Apr 2027

- Major GPA (computer science track): 4.66 / 5. Honors in Algorithms & Data Structures and Operations Research & Optimization.
- Coursework: Control for Robotics (state space, LQ, Kalman), Vision & Machine Learning, Real-time & Embedded Systems, Signal Processing, Distributed Systems, AI & Logic Programming.

EXPERIENCE

Savoir-faire Linux

Montréal, Canada

Software Engineer Intern, Jami (open-source, end-to-end encrypted P2P communication platform)

Aug 2024 – Feb 2025

- Deployed a real-time instance segmentation model (YOLO11-seg) in the live video pipeline, publicly released on jami.net/extensions; cut inference from 0.3 s to 10 ms (30 FPS) with CUDA/cuDNN and a dedicated inference thread.
- Rebuilt the plugin build system nobody could compile anymore (fragile shell scripts to portable CMake); ran the model on Linux, macOS and Android (NNAPI).
- Shipped message forwarding in the desktop client and fixed a customer-reported SSL bug on JAMS; Gerrit code review, Jenkins CI.

C++ · ONNX Runtime · CUDA/cuDNN · OpenCV · Qt/QML · CMake · Gerrit · Jenkins · Linux, Android, macOS

PROJECTS

Deep Learning – Learning the Linux Scheduler, team project

Université Laval

Imitation learning of CFS decisions, from kernel traces to closed-loop evaluation

Winter 2026

- Trained an LSTM on kernel sched_switch traces (perf) to predict the next task run on a CPU: 73.2% top-1 and 96% top-3 on 294k test windows, 76.6% top-1 after a hyperparameter sweep on a cluster; distilled into a 0.13M-parameter student with near-identical results.
- Built a scheduler emulator (CFS, FIFO, RR) and an attention policy (150k parameters) scoring ready tasks, trained by imitating CFS or a heuristic teacher; evaluated in shadow mode then closed loop, analyzed the distribution shift and proposed Dagger.
- Coursework: autograd engine written from scratch (SGD, Adam); fine-tuned EfficientNet-B5 and DINOv3 (ViT) on Kaggle.

PyTorch · perf · Poutyne · Hugging Face · SLURM cluster · IEEE-format report · github.com/alexandreeberhardt/learning-to-schedule

Risk-aware Reinforcement Learning

Université Laval

Obstacle avoidance agents, from tabular methods to deep RL

Winter 2026

- Designed 3 case studies (efficiency, strict avoidance, risk/reward trade-off) and compared Q-learning, SARSA and risk-sensitive Q-learning (Mihatsch & Neuneier), with DQN and PPO prototypes.
- Ran a multi-seed protocol (5 seeds, 3 cases, 100k episodes each), showed how an overly risk-averse agent freezes; Safe RL report.
- Implemented from scratch in NumPy: bandits (UCB, Thompson Sampling, OFUL), value iteration, Monte Carlo control, Q-learning.

Python · NumPy · Gymnasium · Stable-Baselines3 · pandas · Matplotlib · github.com/alexandreeberhardt/RL-FrozenLake

State Estimation & Control for Robotics

Université Laval, UTC

Kalman/EKF/UKF localization, EKF and pose-graph SLAM, state feedback, identification

2025

- Implemented an EKF fusing two radars, an accelerometer and a gyroscope to estimate a lander's altitude, velocity and pitch; identified an ARX model of vehicle lateral dynamics from measured data (MATLAB).

Real-time kernel – preemptive RTOS in C and ARM assembly for Cortex-M7 with priority inheritance

Spring 2025

Eye-controlled mouse – stereo gaze tracking, spline calibration, blink-to-click (MediaPipe, OpenCV)

Fall 2025

LEADERSHIP

Student Affairs Committee, Université Laval – elected student member, representing 15,000 graduate students

2026 – 2027

Council of Studies (CEVU), UTC – elected student vice-president for 5,000 students; budgets, CA\$400k/year grants

2023 – 2025

Student Associations, UTC – two presidencies, student union board, secretary of a 17-club tech cluster

2022 – 2025

SKILLS

- **Programming:** Python, C/C++, CUDA, Rust, MATLAB, TypeScript, SQL.
- **ML & robotics:** PyTorch, Hugging Face, Stable-Baselines3, Gymnasium, ONNX Runtime, OpenCV, scikit-learn, Kalman filters.
- **Systems:** Linux, Git, Docker, Kubernetes, CMake, SLURM, CI (Gerrit, Jenkins), Yocto.
- **Languages:** French (native), English (professional).
- **Agentic skills:** Claude Code, Codex, Hermes, Deep Research, GitHub Copilot, Obsidian.